

What is claimed is:

1. A method of manufacturing a high-strength erosion electrode having a patented steel core and an outer layer of a zinc alloy, said method comprising the steps of:

providing a steel core having a carbon content of from 0.6 to 1 wt.%;

applying an intermediate layer of copper or a high copper content-containing alloy onto the steel core;

applying an outer layer of zinc or a high zinc content-containing alloy onto the intermediate layer to form a wire electrode;

performing diffusion annealing on the wire electrode for a period of time sufficient to completely consolidate the intermediate layer into the outer layer and form an outer layer of a zinc alloy having a zinc content of from 40-60% and a melting point higher than the austenitization temperature required for patenting of the steel core; and

performing intermediate annealing on the wire electrode under conditions sufficient to subject the wire electrode to a patenting treatment and form the high strength erosion electrode.

2. A method of manufacturing a high-strength erosion electrode having a patented steel core and an outer layer of a zinc alloy, said method comprising the steps of:

applying an intermediate layer of copper or a high copper-content containing alloy onto a patented steel wire having a carbon content of from 0.6 to 1 wt.%;

applying an outer layer of zinc or a high zinc content-containing alloy onto the intermediate layer;

performing diffusion annealing to completely

consolidate the intermediate layer into the outer layer and form a brass outer layer having a zinc content of 40-60% and a predetermined strength;

deforming the wire to reduce the diameter thereof; and

performing a patenting step after each deformation step until the wire reaches its final diameter.

3. An erosion electrode consisting of a patented steel core and an outer layer containing 40-60 wt.% zinc, said patented steel core having a carbon content of 0.6 to 1 wt.% and occupying an area of 50 to 75% of the cross-sectional area of the erosion electrode.

4. The erosion electrode according to Claim 3, wherein the conductivity of the erosion electrode is at least $10 \text{ S}\cdot\text{m}/\text{mm}^2$.

5. The erosion electrode according to Claim 3, wherein the strength of the erosion electrode is at least $1800 \text{ N}/\text{mm}^2$.